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FORECAST FOR MINICOMPUTERS IN THE FEDERAL GOVERNMENT

1979 - 1984

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Forecast for Minicomputers in the Federal Government 1979-1984.

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FORECAST FOR MINICOMPUTERS IN THE FEDERAL GOVERNMENT 1979 - 1984

For:

BURROUGHS CORPORATION

FEDERAL AND SPECIAL SYSTEMS GROUP

PAOLI, PENNSYLVANIA

By:

INPUT

PALO ALTO, CALIFORNIA

August 1980

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ORGANIZATION OF FINDINGS AND DEFINITIONS

- THE MARKET IS SEGMENTED ACCORDING TO THE ENVIRONMENT IN WHICH THE SYSTEMS ARE USED.

- THE TWO CLASSIFICATIONS USED ARE IDENTIFIED BY THE UNITED STATES FEDERAL GOVERNMENT AS:

  - GENERAL MANAGEMENT CLASSIFICATION: APPLIES TO COMPUTER SYSTEMS USED IN A GENERAL UTILITY ENVIRONMENT

  - SPECIAL MANAGEMENT CLASSIFICATION: APPLIES TO COMPUTER SYSTEMS USED IN A CLASSIFIED, CONTROL OR MOBILE ENVIRONMENT

    - CLASSIFIED SYSTEMS - ADP EQUIPMENT, THE PHYSICAL LOCATION OF WHICH IS CLASSIFIED

    - CONTROL SYSTEMS - ADP EQUIPMENT WHICH IS AN INTEGRAL PART OF A TOTAL FACILITY OR LARGER COMPLEX OF EQUIPMENT AND HAS THE PRIMARY PURPOSE OF CONTROLLING, MONITORING, ANALYZING OR MEASURING A PROCESS OR OTHER EQUIPMENT

ORGANIZATION OF FINDINGS AND DEFINITIONS (CONT.)

- SPECIAL MANAGEMENT CLASSIFICATION: (CONT.)

  . MOBILE SYSTEMS - ADP EQUIPMENT LOCATED ON SHIPS, PLANES OR VANS

- TO THE SPECIAL MANAGEMENT CLASSIFICATION, WE ADD:

  - EMBEDDED SYSTEMS - ADP EQUIPMENT BUILT OR MODIFIED TO SPECIAL GOVERNMENT DESIGN AND INTEGRATED INTO WEAPONS AND SPACE SYSTEMS

- EACH OF THE TWO MAJOR MANAGEMENT CLASSIFICATIONS ARE FURTHER SEGMENTED BY THREE MINICOMPUTER SIZE CLASSES

  - SUPER MINI - $25,000 + PRICE, 16-BIT AND LARGER, MAPPING CAPABILITY, MINIMUM ONE HIGH-LEVEL LANGUAGE

  - TRADITIONAL MINI - $2,000 to $25,000 PRICE, EIGHT TO SIXTEEN BIT, GENERALLY 4 TO 64K WORDS OF MEMORY

  - MICROMINI - LESS THAN $2,000 PRICE, BASED ON LSI TECHNOLOGY

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ORGANIZATION OF FINDINGS AND DEFINITIONS (CONT.)

- FOR EACH OF THE THREE MINICOMPUTER SIZE CLASSES, INFORMATION HAS BEEN GATHERED ON:
  - EQUIPMENT PRICE - TOTAL COST OF THE CPU's IN EACH CLASS
  - VALUE ADDED PRICE - TOTAL COST OF SOFTWARE, PERIPHERALS AND SYSTEM INTEGRATION ASSOCIATED WITH THE CPU'S IN EACH CLASS
- DELIVERABLES ALSO INCLUDE:
  - LISTINGS OF MAJOR VENDORS
  - COMPETITIVE MARKET SHARES OF THESE VENDORS
  - MARKET SEGMENT ADDRESSED BY THESE VENDORS

GENERAL ASSUMPTIONS AND PARAMETERS OF THE FORECAST

- DUE TO PROCUREMENT CYCLES, USE OF COMPUTERS IN THE FEDERAL GOVERNMENT TRAILS COMMERCIAL USE. THE IMPROVING PRICE/PERFORMANCE RATIOS SHOW ITS PRESENCE IN FEDERAL PROCUREMENT 12 MONTHS AFTER THE COMMERCIAL AREA.
- THE FORECAST IS IN PRESENT DOLLARS (NOT INFLATED).
- THE FORECAST PRECLUDES ANY MILITARY CONFLICTS, LIMITED OR GLOBAL.
- ESTIMATED AND ACTUAL FIGURES FOR FISCAL YEAR 1979/1980 ARE USED AS A BASE.
- THE FORECAST PERIOD IS FISCAL YEARS 1979/1980 TO 1984/1985.
- HISTORICAL NUMBERS ARE OF LITTLE VALUE SINCE THE MARKET IS DISCONTINUOUS DUE TO THE IMPROVED PRICE/PERFORMANCE RATIO EXPANDING THE BASE.
- THE CENTRAL PROCESSING UNIT WILL DECLINE RELATIVE TO THE COST OF PERIPHERALS.

INPUT

GENERAL ASSUMPTIONS AND PARAMETERS OF THE FORECAST (CONT.)

- EMBEDDED COMPUTERS ARE AN INTEGRAL PART OF THE WEAPON OR SPACE SYSTEMS.

- THE FORECAST FOR THE NUMBER OF EMBEDDED COMPUTERS IN THE COMING YEARS IS COMPLICATED BY "INDEFINITE CONTRACTS." THERE IS NO AGREEMENT TO PROCURE A SET NUMBER PER YEAR.

INPUT

FEDERAL CPU SUPPLIERS FY '79

	UNITS	DOLLARS	AVERAGE
• IBM	1284	$1.5B	$1,168K
• CDC	497	.7	1,408K
• SPERRY	1778	.7	393K
• HONEYWELL	896	.5	558K
• BURROUGHS	303	.3	990K
• DEC	3659	.2	55K
• XEROX	297	.1	336K
• HP	1093	.06	54K
• MODCOMP	588	.03	51K
• DG	1052	.03	28K

- TOTAL GSA REPORTED $5.4B
- TOTAL CPU's 14,333

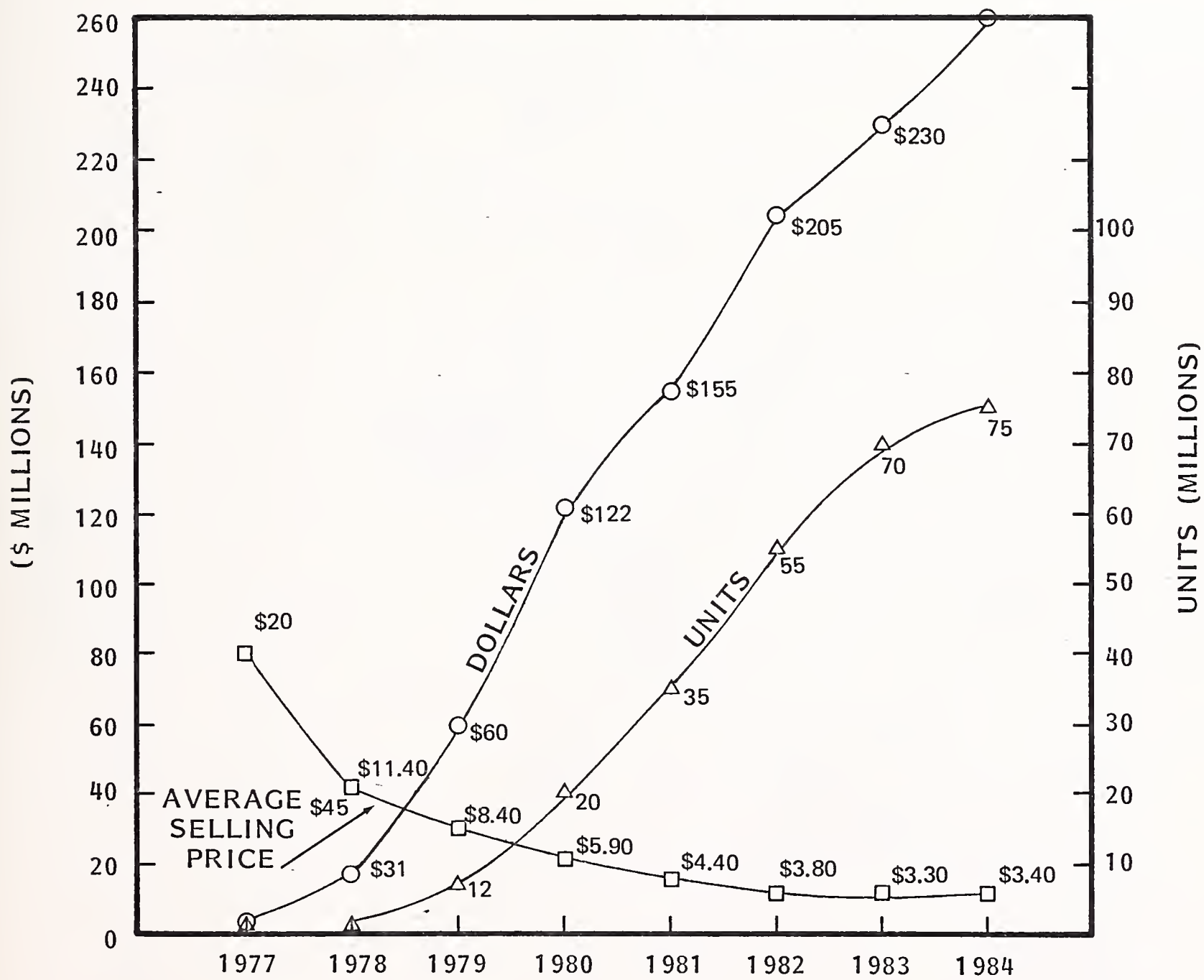
INPUT

TOP 14 DOD CONTRACTORS FY 1979

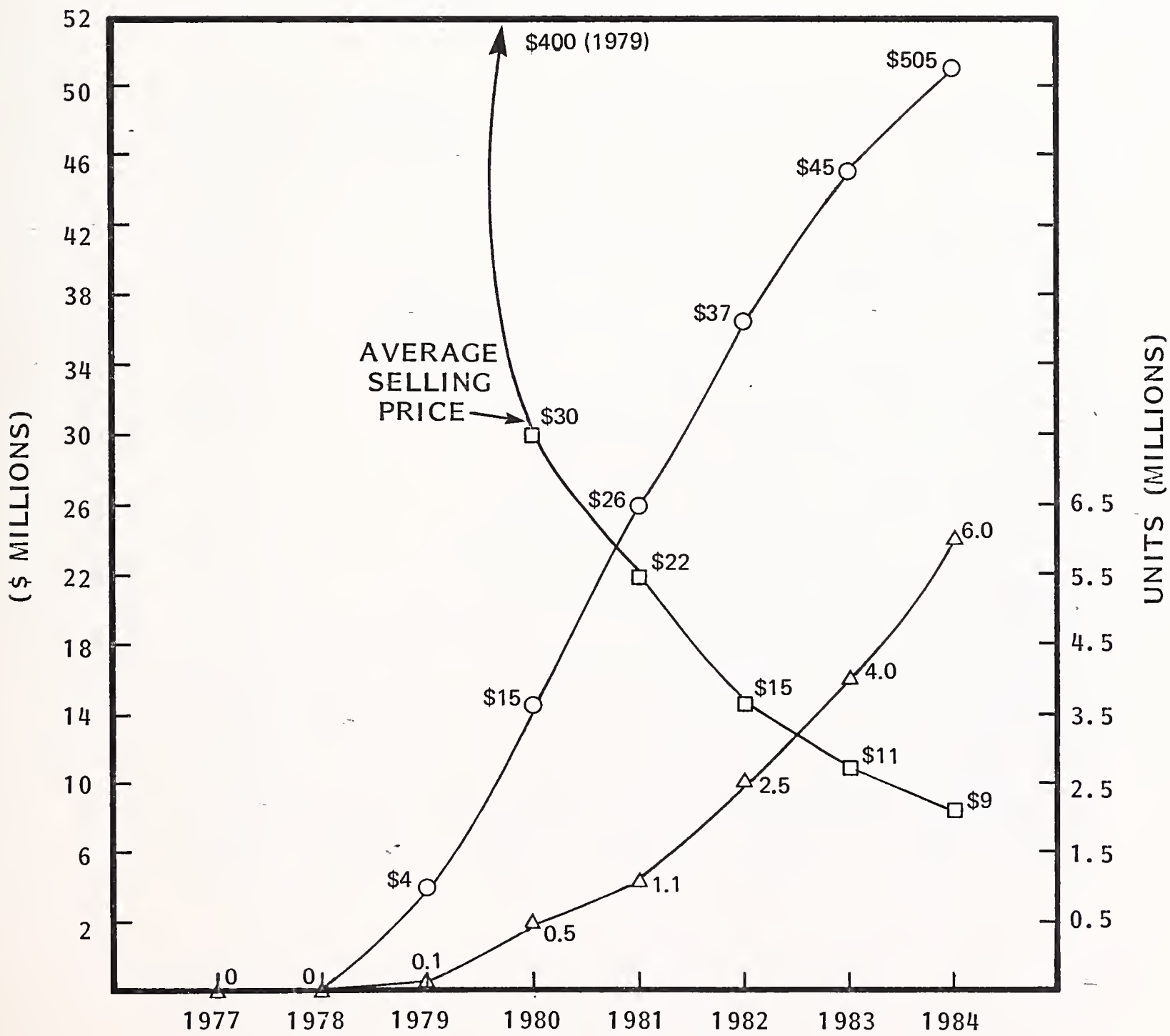
• GENERAL DYNAMICS	$3.5B
• MCDONNELL DOUGLAS	3.2
• UNITED TECHNOLOGIES	2.5
• GENERAL ELECTRIC	2.0
• LOCKHEED	1.8
• HUGHES	1.5
• BOEING	1.5
• GRUMMAN	1.4
• RAYTHEON	1.2
• TENNECO	1.1
• SPERRY	.8
• HONEYWELL	.7
• IBM	.5
• TI	.4

INPUT

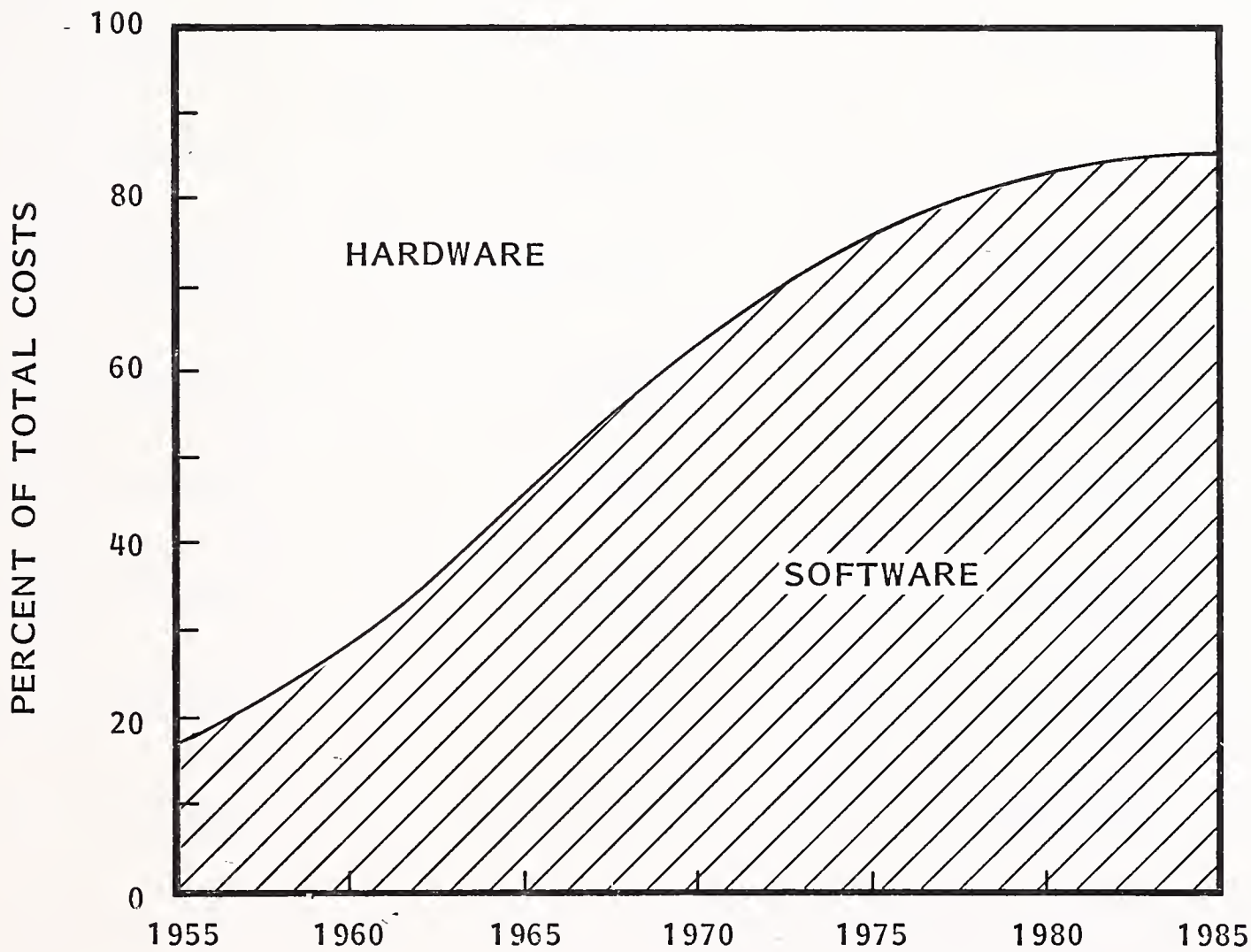
WORLDWIDE 8-BIT SINGLE CHIP
MICROCOMPUTER MARKET



WORLDWIDE 16-BIT SINGLE CHIP MICROCOMPUTER MARKET



AF PROJECTION OF HARDWARE/SOFTWARE
COSTS FOR PROJECTS



U.S. MINICOMPUTER MARKET

1975-1984

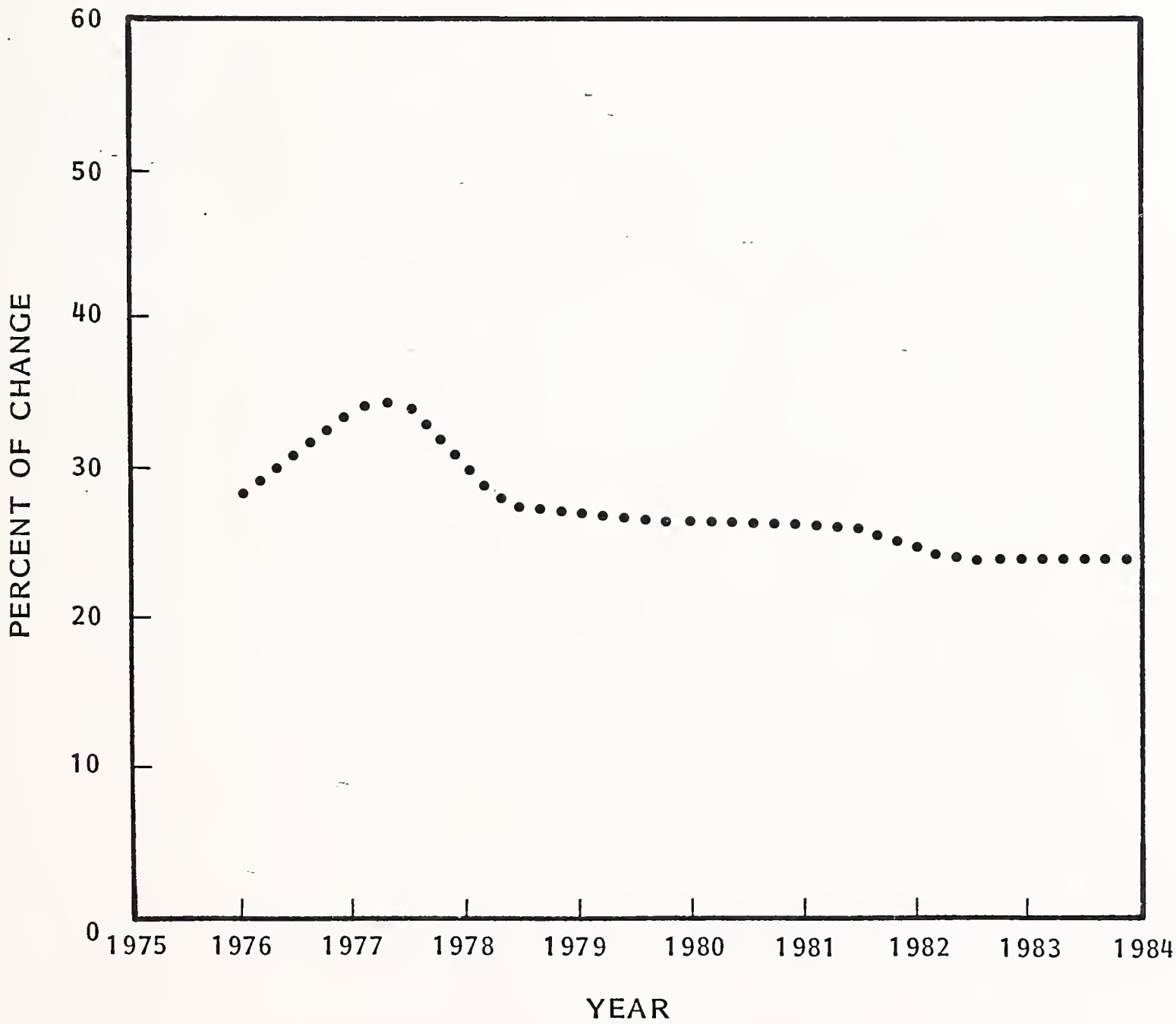
YEAR	UNIT SHIPMENTS	PERCENT CHANGE	REVENUES ($ MILLION)	PERCENT CHANGE	INSTALLED BASE	PERCENT CHANGE
1975	30,900		$ 725		122,700	
		25%		42%		29%
1976	38,625		1,029		158,850	
		49		55		34
1977	57,375		1,549		212,450	
		23		37		30
1978	70,410		2,121		275,600	
		19		38		27
1979	83,600		2,933		349,050	
		38		23		26
1980	115,575		3,599		440,200	
		24		31		26
1981	142,925		4,720		554,000	
		16		27		24
1982	162,500		5,994		689,250	
		16		28		24
1983	192,400		7,695		851,400	
		18		26		24
1984	227,800		9,719		1,055,000	

U.S. MINICOMPUTER SYSTEM SHIPMENTS BY SIZE CLASS
1975-1984

YEAR	MICROMINIS		TRADITIONAL MINIS		SUPERMINIS		TOTAL SYSTEMS	
	UNITS	($ MILLION)	UNITS	($ MILLION)	UNITS	($ MILLION)	UNITS	($ MILLION)
1975	2,861	10.9	25,368	370.4	2,670	195.7	30,900	577.8
% CHANGE	85%	80%	17%	30%	36%	40%	25%	33%
1976	5,291	19.6	29,796	479.7	3,637	274.2	38,625	768.6
% CHANGE	211%	143%	18%	25%	58%	59%	49%	40%
1977	16,442	47.7	35.195	598.3	5,738	437.2	57,375	1,078.7
% CHANGE	40%	45%	10%	11%	52%	53%	23%	30%
1978	23,005	69.0	38,691	661.6	8,714	668.4	70,410	1,401.1
% CHANGE	24%	20%	10%	6%	46%	47%	19%	26%
1979	28,467	82.6	42,378	699.2	12,756	979.7	83,600	1,764.0
% CHANGE	45%	45%	25%	14%	68%	69%	38%	45%
1980	41,265	119.7	52,822	797.6	21,488	1,654.6	115,575	2,565.8
% CHANGE	34%	39%	8%	6%	41%	41%	24%	31%
1981	55,438	166.3	57,170	846.1	30,317	2,340.5	142,925	3,358.7
% CHANGE	25%	25%	2%	-6%	29%	30%	16%	20%
1982	69,098	207.3	58,275	792.5	39,128	3,032.4	166,500	4,029.3
% CHANGE	23%	23%	.3%	-9%	26%	26%	16%	19%
1983	84,820	294.4	58,457	744.8	49,123	3,816.9	192,400	4,790.8
% CHANGE	29%	29%	-2%	-7%	24%	23%	18%	19%
1984	109,681	329.0	57,372	676.9	60,747	4,683.6	227,800	5,695.0

U.S. MINICOMPUTER INSTALLED BASE

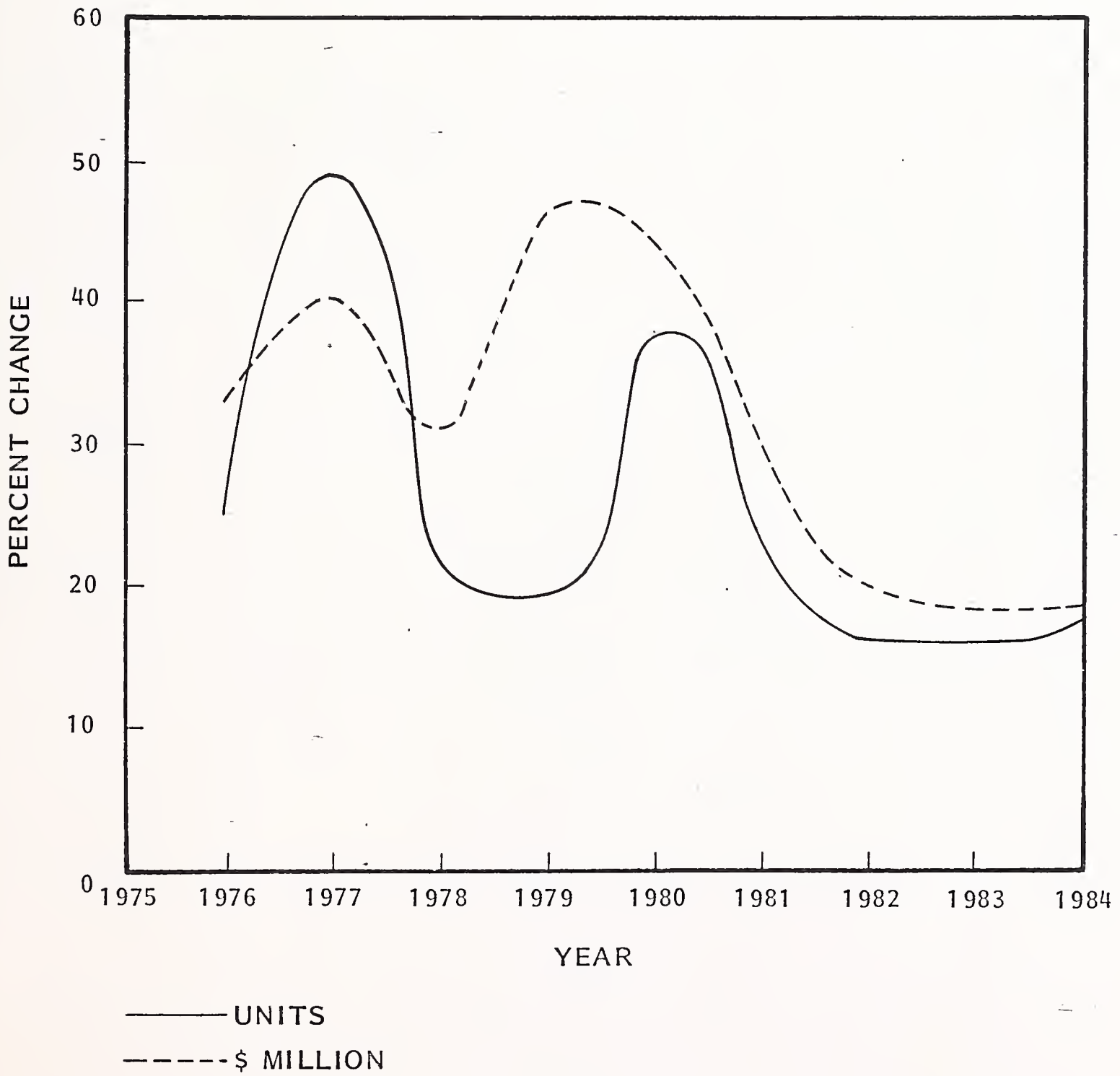
1975-1984



INPUT

U.S. TOTAL SYSTEMS SHIPMENTS

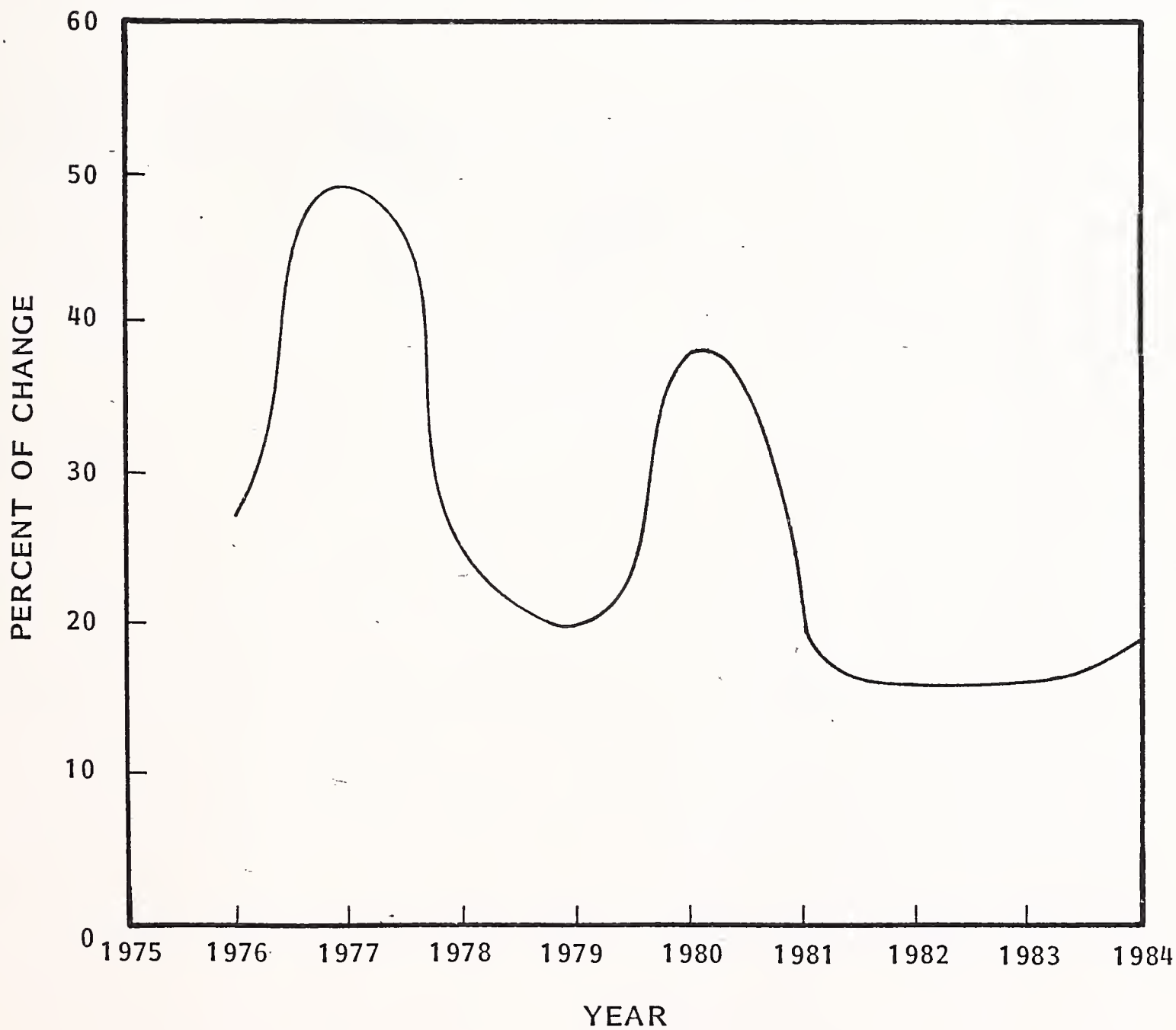
1975-1984



INPUT

U.S. MINICOMPUTER UNIT SHIPMENTS

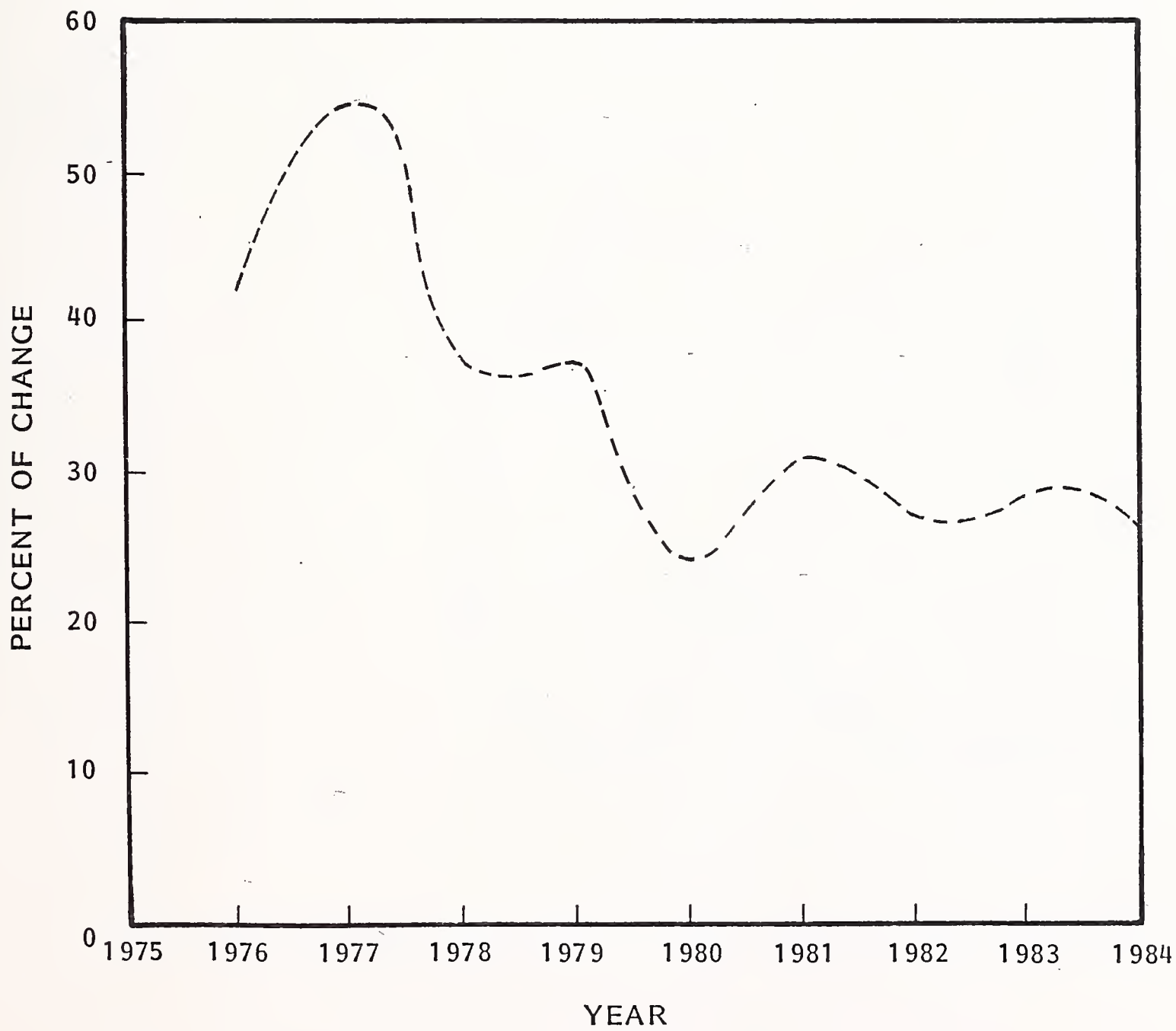
1975-1984



INPUT

U.S. MINICOMPUTER REVENUES ($M)

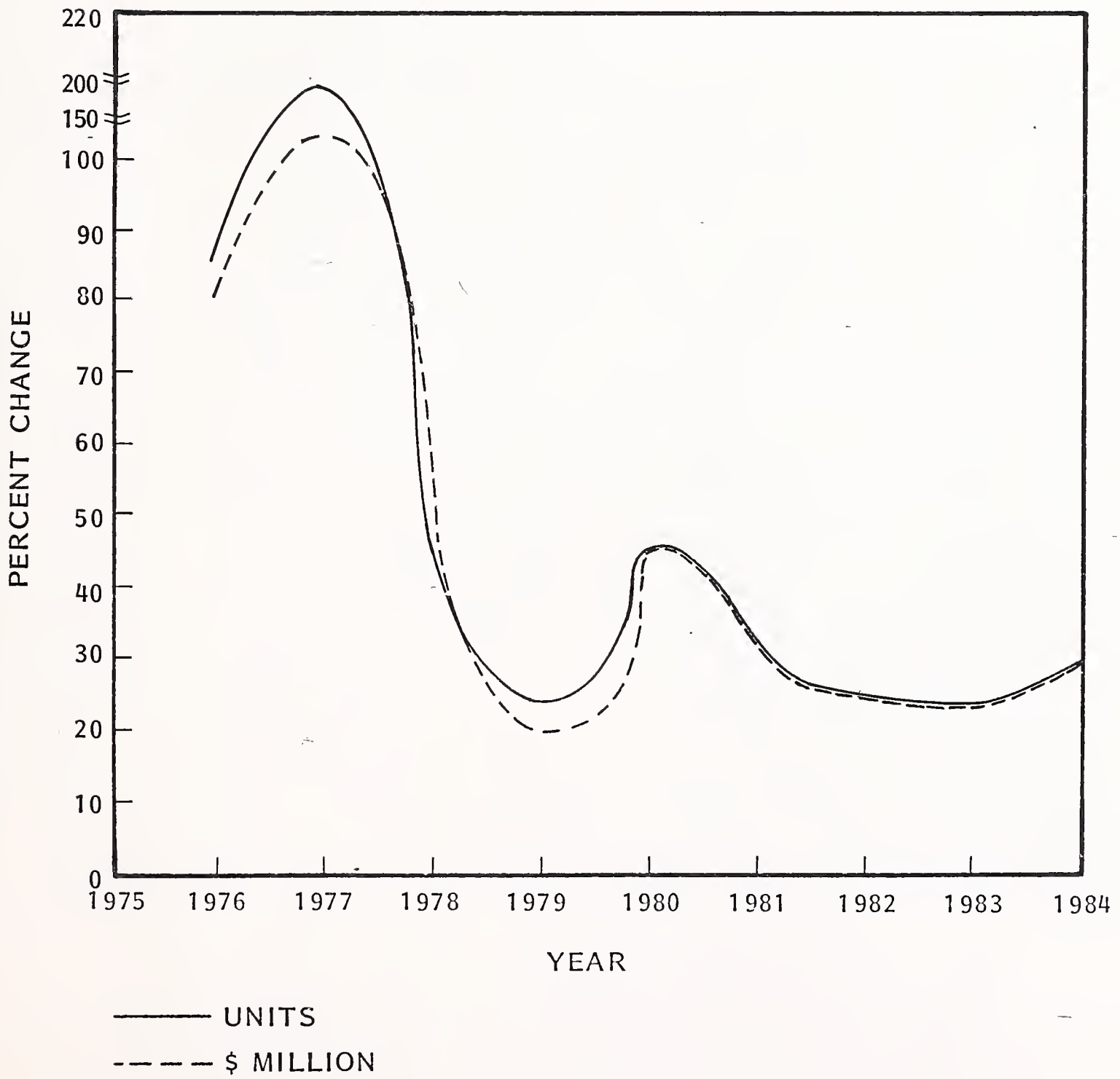
1975-1984



INPUT

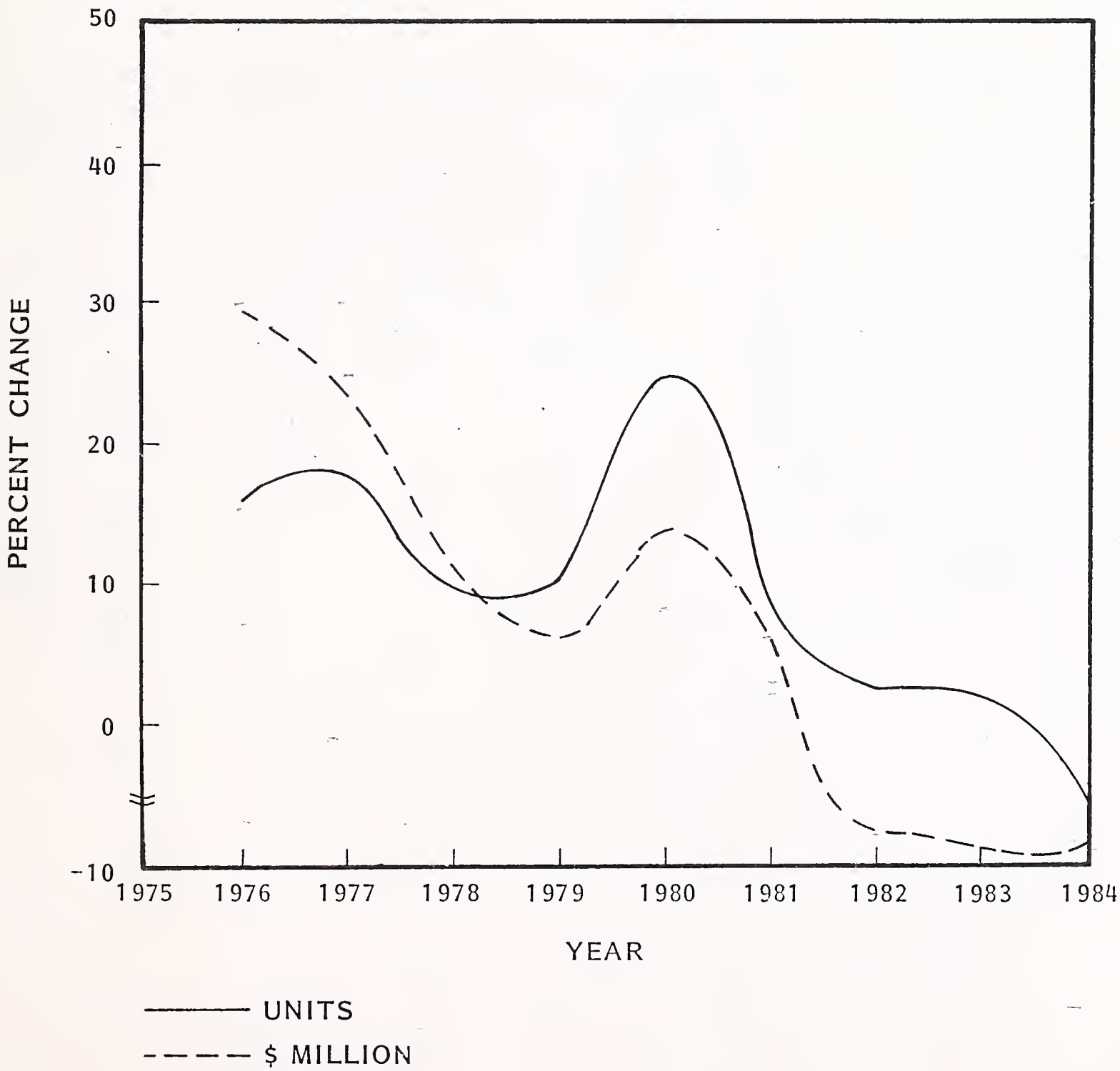
U.S. MICROMINI SHIPMENTS

1975-1984



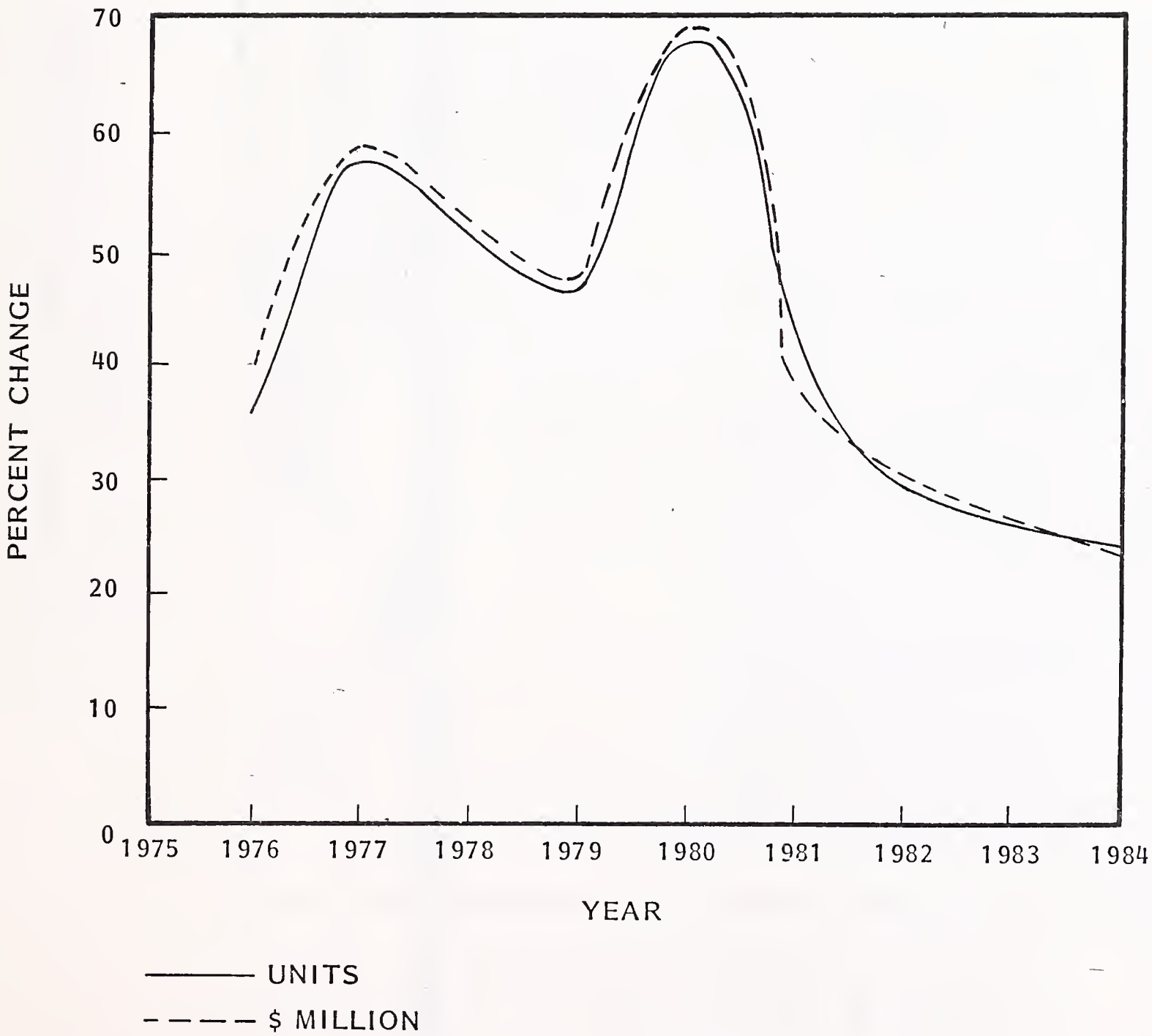
U.S. TRADITIONAL MINI SHIPMENTS

1975-1984



U.S. SUPER MINI SHIPMENTS

1975-1984



INPUT

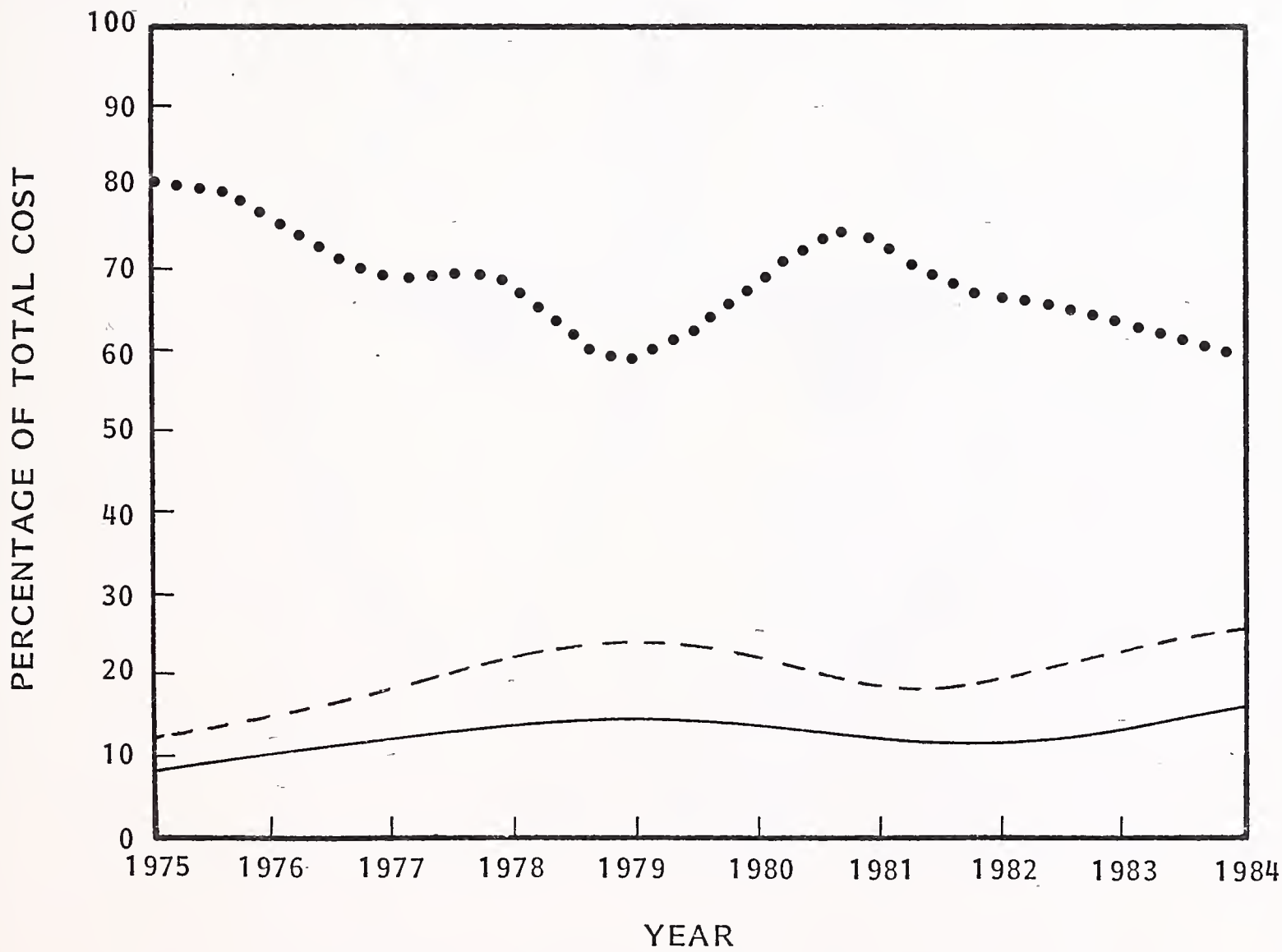
U.S. MINICOMPUTER REVENUE COMPONENETS

1979-1984

YEAR	SERVICE REVENUES		ADD-ON, OTHER PERIPHERALS, AND SOFTWARE REVENUES		CPU REVENUES		TOTAL REVENUE ($ MILLION)
	($ MILLION)	PERCENT OF TOTAL	($ MILLION)	PERCENT OF TOTAL	($ MILLION)	PERCENT OF TOTAL	
1975	60.5	8%	86.7	12%	577.8	80%	725
1976	102.7	10	157.7	15	768.6	75	1,029
1977	179.2	12	291.1	19	1,078.7	69	1,549
1978	271.8	13	448.1	21	1,401.1	66	2,121
1979	438.4	15	730.6	25	1,764.0	60	2,933
1980	391.1	11	638.1	18	2,565.8	71	3,595
1981	507.2	11	854.1	18	3,358.7	71	4,720
1982	741.4	12	1,223.3	20	4,029.3	67	5,994
1983	1,108.9	14	1,795.3	23	4,790.8	63	7,695
1984	1,483.3	15	2,539.7	26	5,695.0	59	9,715

U.S. MINICOMPUTER REVENUE COMPONENTS

1975-1984

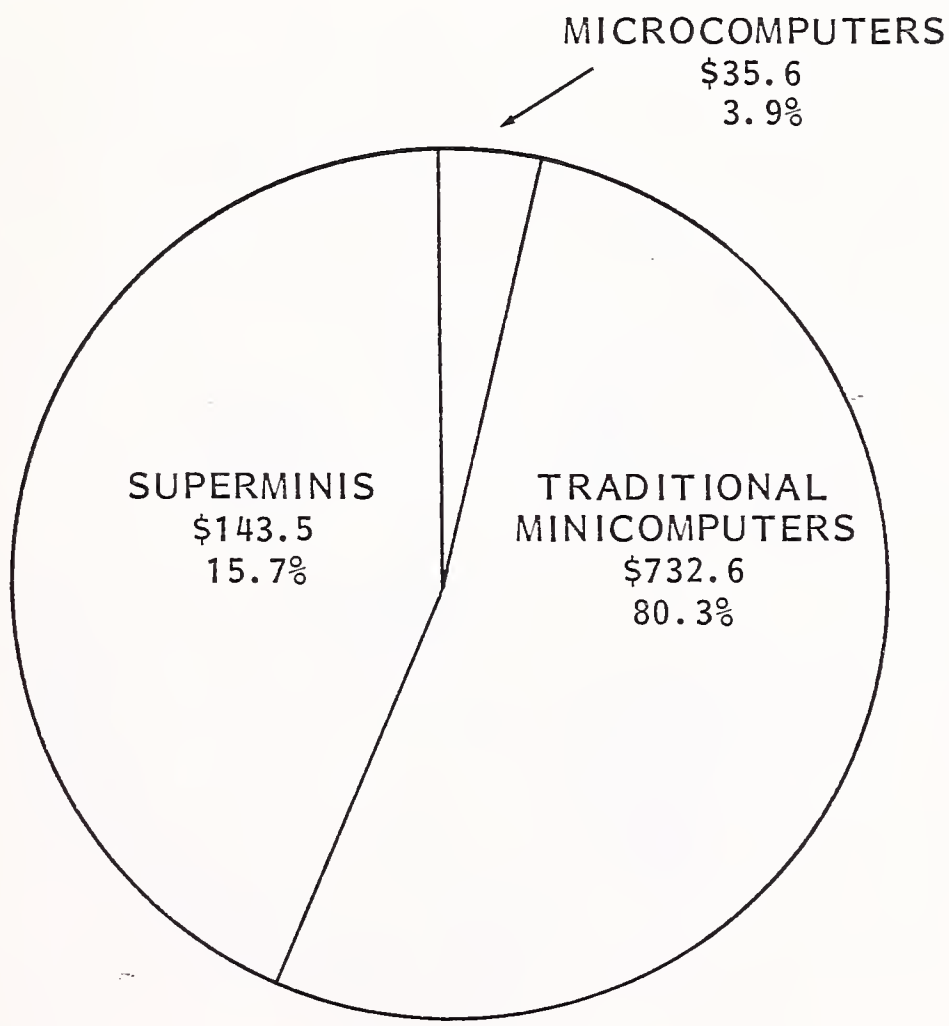


•••••• CPU SHIPMENTS

– – – – ADD-ON, OTHER PERIPHERALS AND SOFTWARE

——— SERVICE REVENUES

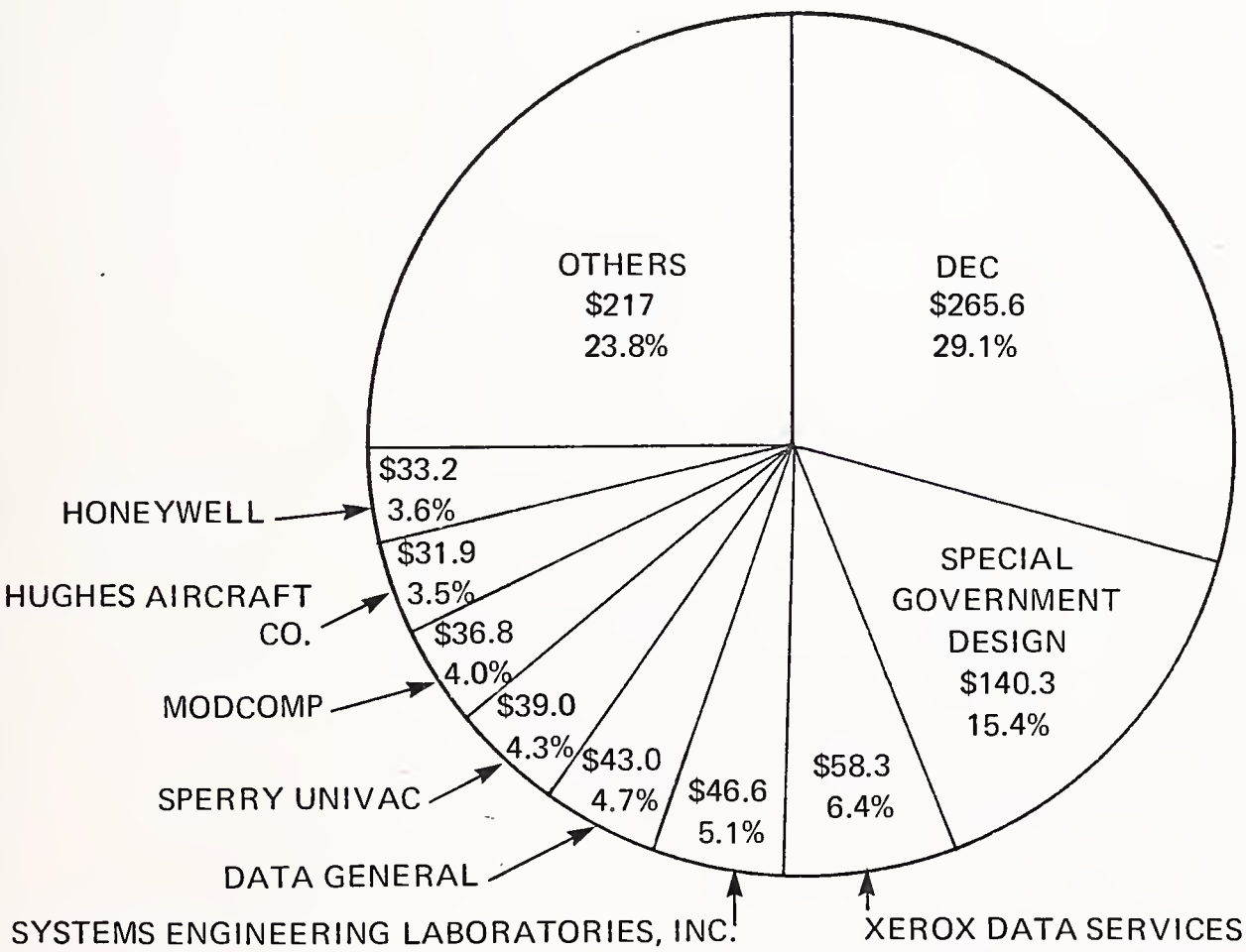
MINICOMPUTER SYSTEMS IN THE FEDERAL GOVERNMENT
INSTALLED BASE-BY CLASS SIZE 1978 ($M)



TOTAL = $911.7M

INPUT

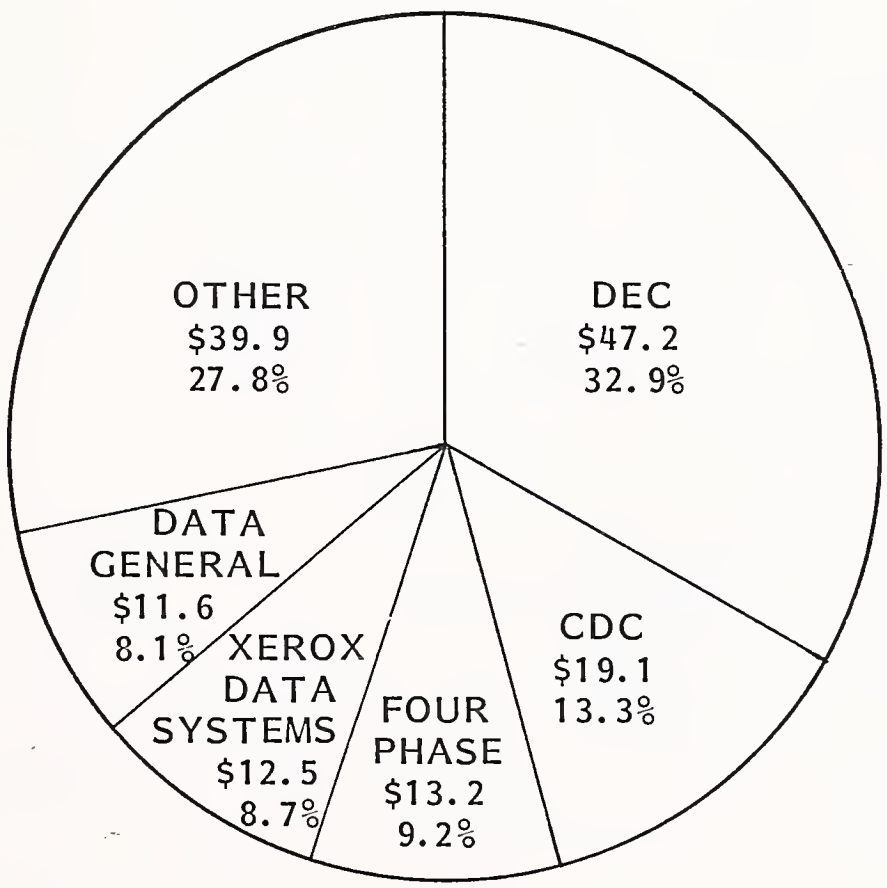
SHARE OF THE INSTALLED BASE OF FEDERAL GOVERNMENT MINICOMPUTERS



TOTAL = $911.7M

INPUT

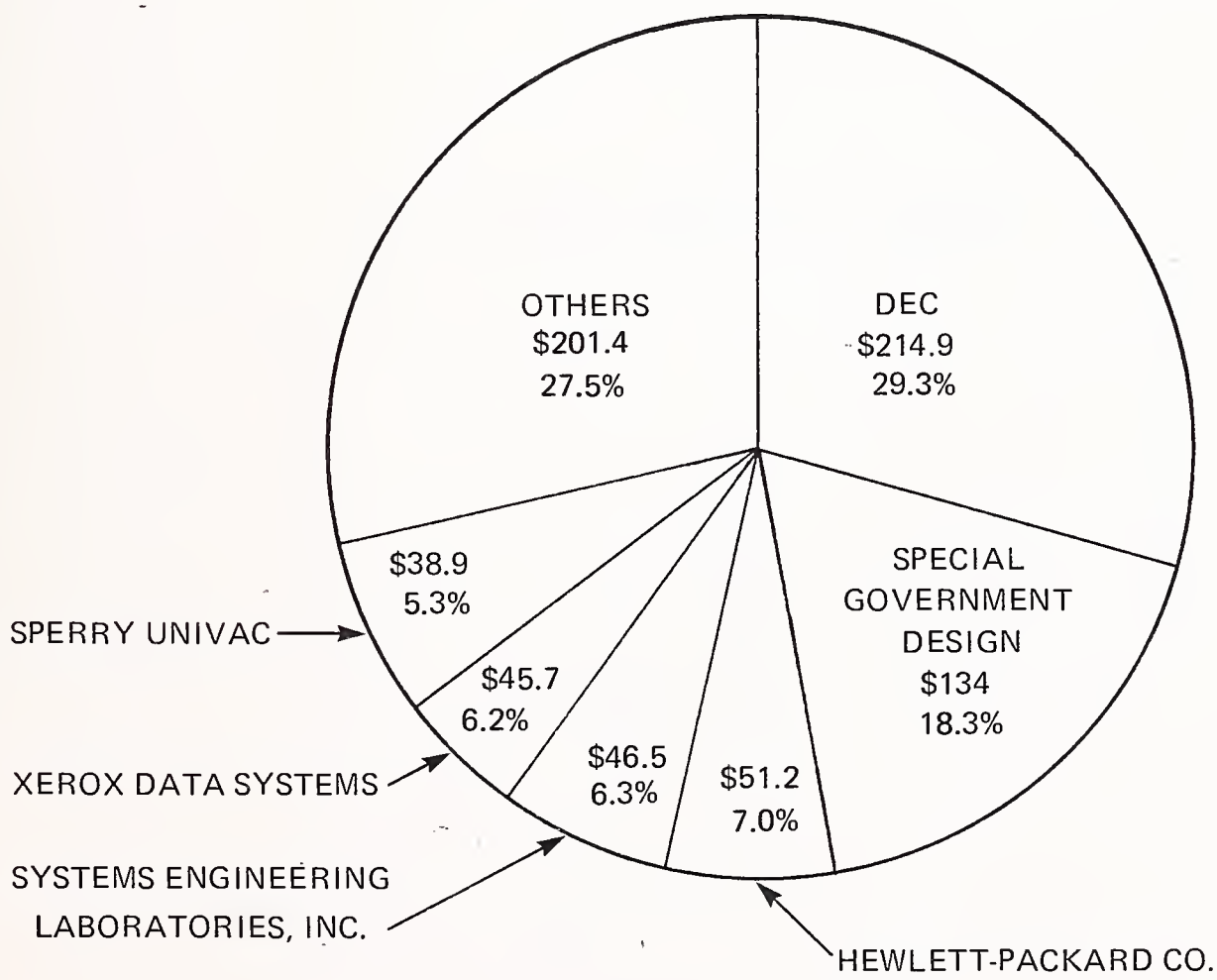
SHARES OF THE SUPER MINICOMPUTER INSTALLED BASE-1978 ($M)



TOTAL = $143.5M

INPUT

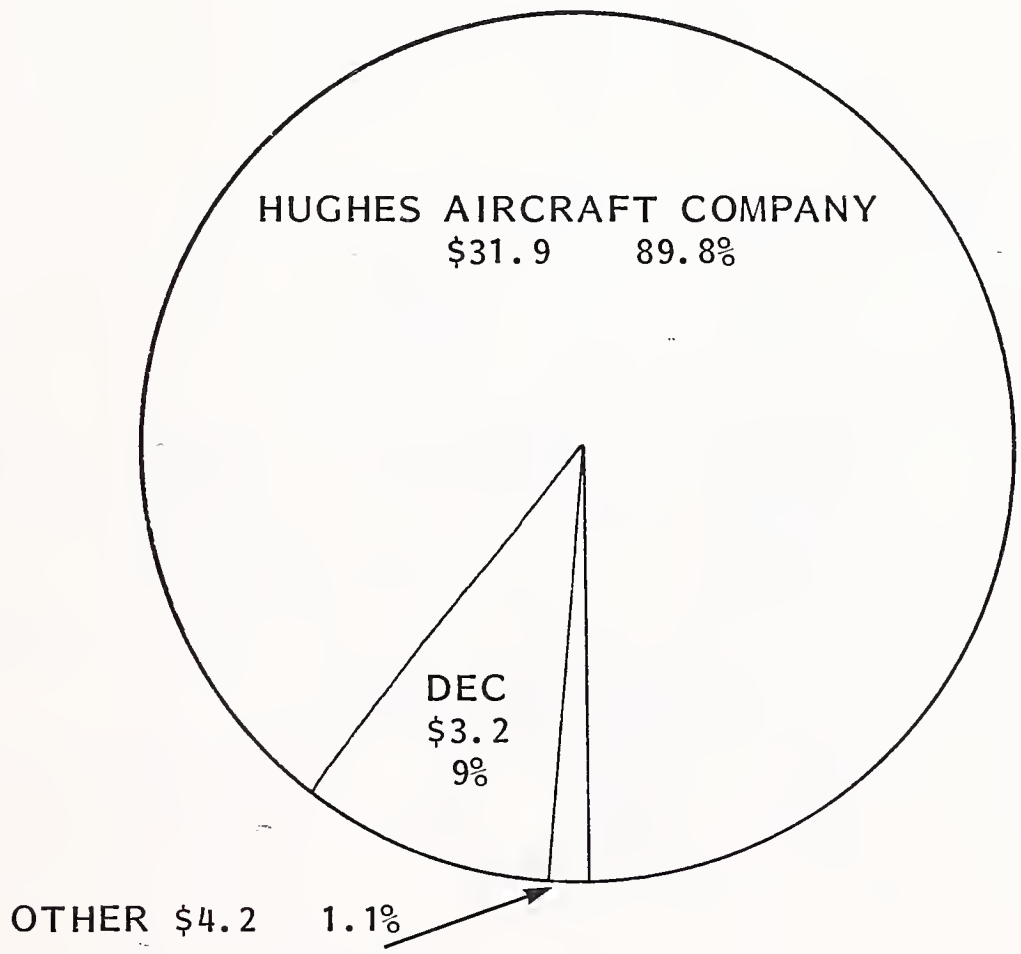
SHARES OF THE TRADITIONAL MINICOMPUTER INSTALLED BASE-1978 ($M)



TOTAL = $732.6M

INPUT

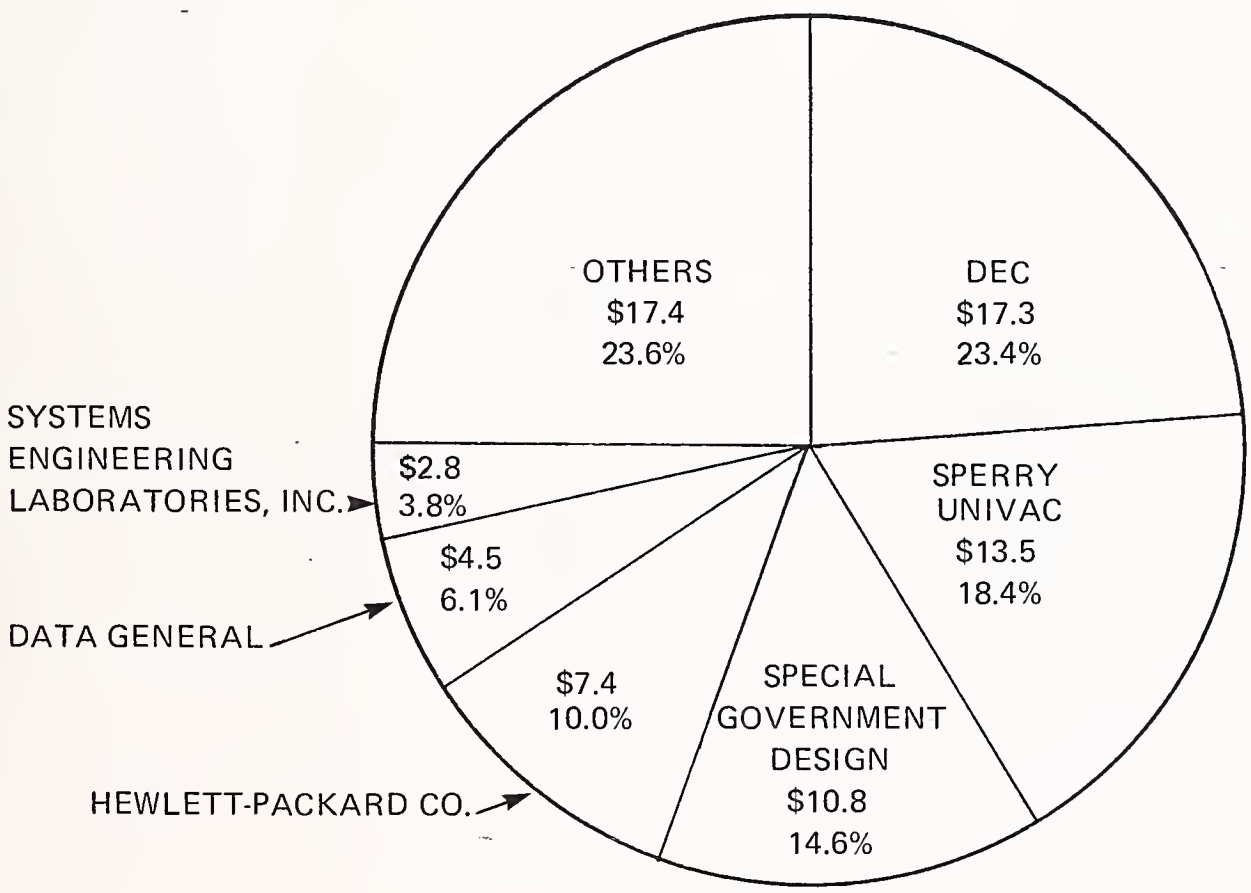
SHARES OF THE MICROCOMPUTER INSTALLED BASE-1978 ($M)



TOTAL = $35.6M

INPUT

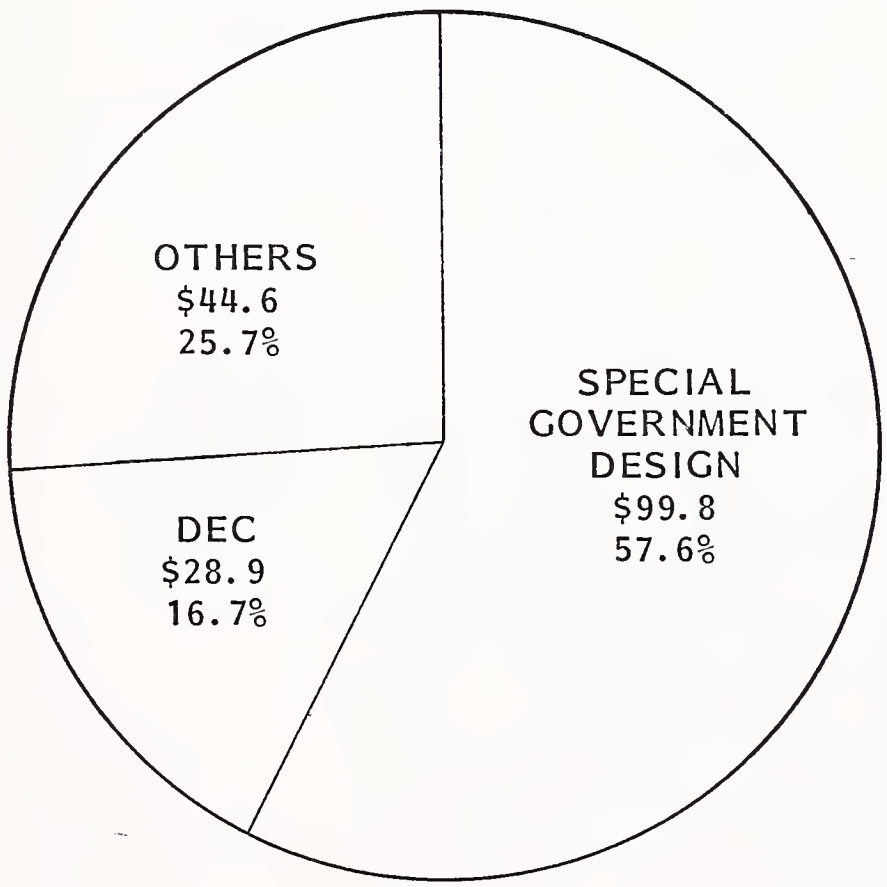
SHARES OF ARMY MINICOMPUTER INSTALLED BASE-1978 ($M)



TOTAL = $73.7M

INPUT

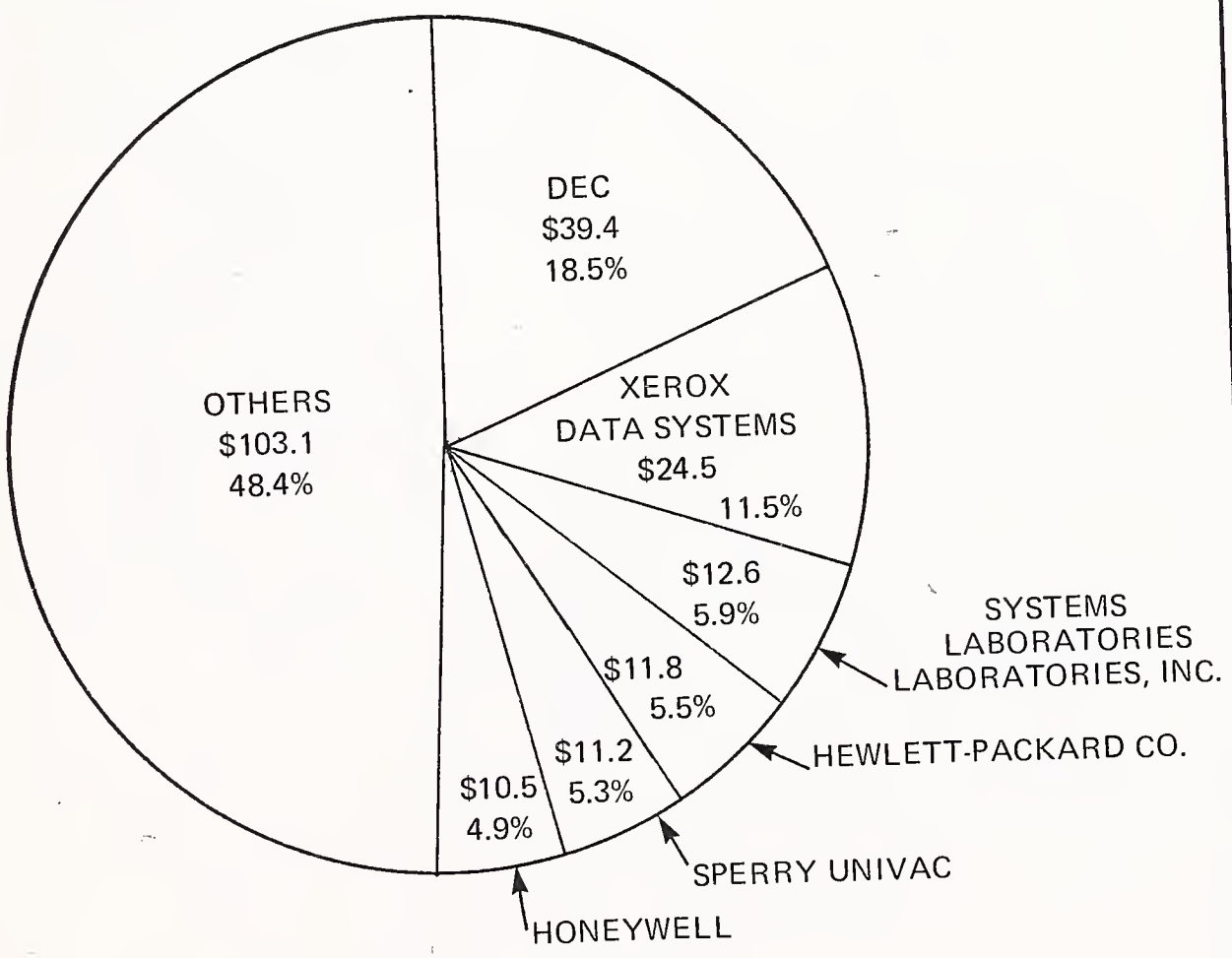
SHARES OF NAVY MINICOMPUTERS INSTALLED BASE-1978 ($M)



TOTAL = $173.3M

INPUT

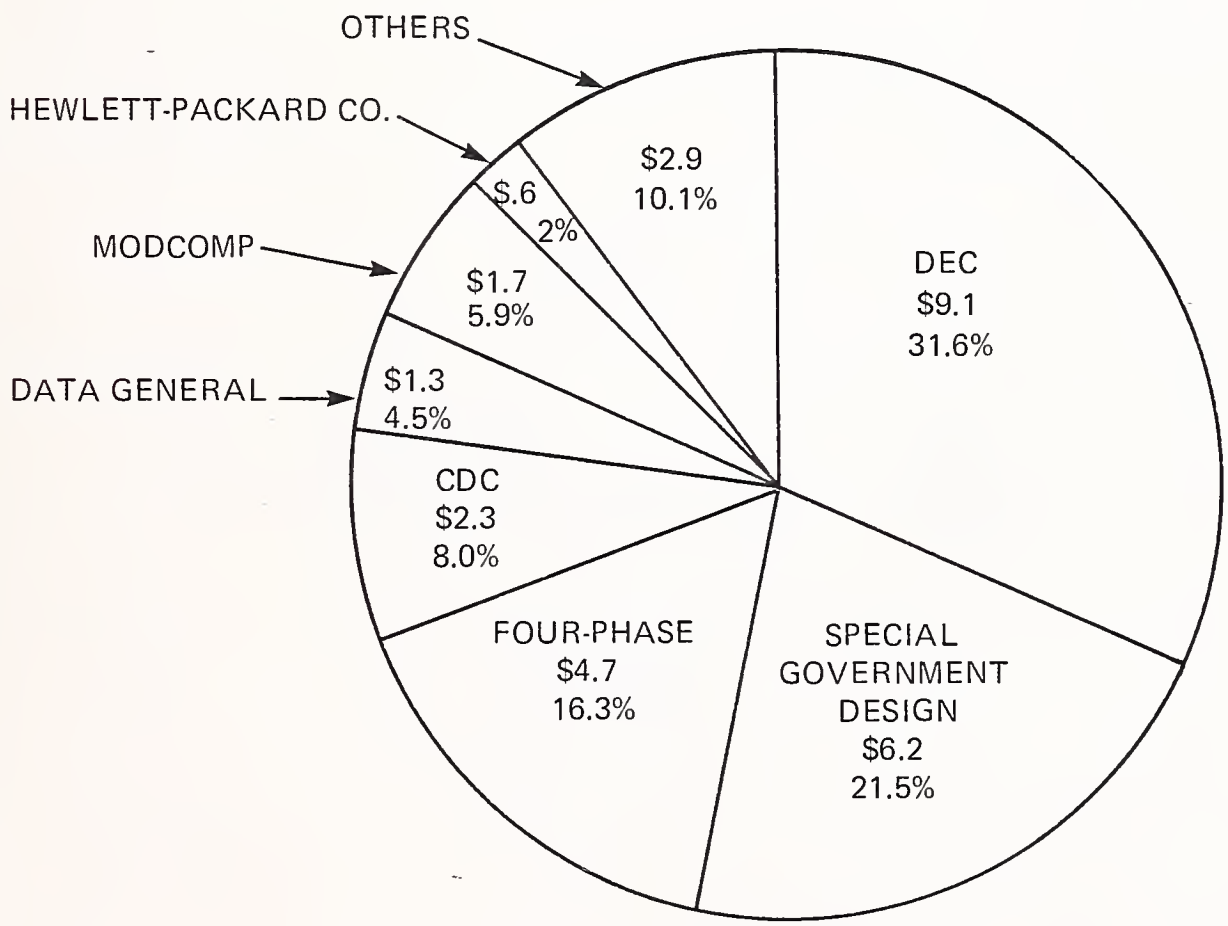
SHARES OF AIRFORCE MINICOMPUTER INSTALLED BASE-1978 ($M)



TOTAL = $213.1M

INPUT

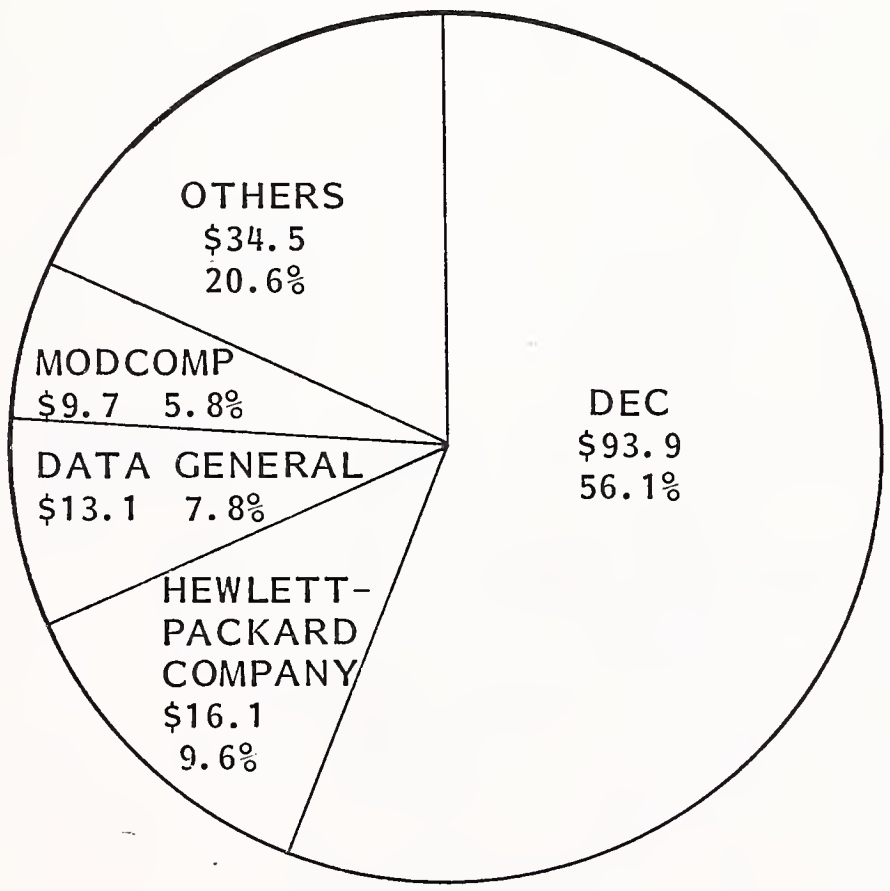
SHARES OF THE REMAINDER OF THE DEPARTMENT OF DEFENSE INSTALLED BASE-1978 ($M)



TOTAL = $28.8

INPUT

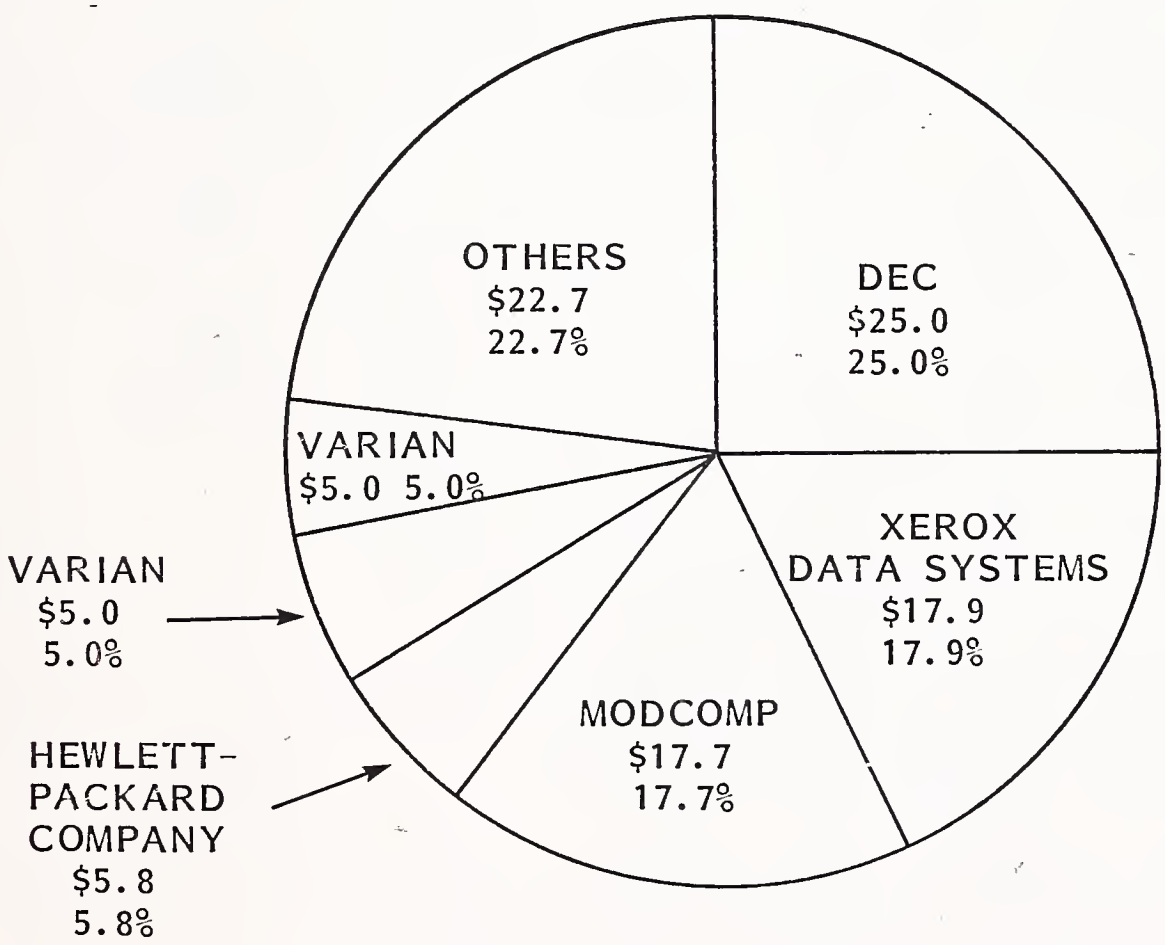
SHARES OF DEPARTMENT OF ENERGY INSTALLED BASE-1978 ($M)



TOTAL = $167.3

INPUT

SHARES OF NASA INSTALLED BASE-1978 ($M)



TOTAL = $99.9M

INPUT

ALL MINICOMPUTERS IN THE FEDERAL GOVERNMENT
INSTALLED BASE-1978 ($M)

YEAR	CPUs ($M)		ADD-ONS AND OTHER PERIPHERALS ($M)		SERVICE ($M)
	PUR-CHASE	LEASE	PUR-CHASE	LEASE	
PREVIOUS TO 1975	245.7	12.0	320.4	14.0	14.2
AAGR 1975-1978	13.1%	.1%	10.5%	4.2%	23.4%
1978	402.8	12.0	479.8	16.9	33.3
AAGR 1979-1984	11.0%	12.2%	12.5%	15.4%	14.1%
1984	753.5	23.9	970.7	40.0	73.0

INPUT

SUPERMINICOMPUTERS IN THE FEDERAL GOVERNMENT
INSTALLED BASE-1978 ($M)

YEAR	CPUs ($M)		ADD-ONS AND OTHER PERIPHERALS ($M)		SERVICE ($M)
	PUR-CHASE	LEASE	PUR-CHASE	LEASE	
PREVIOUS TO 1975	15.0	2.4	36.4	3.6	2.6
AAGR 1975-1978	40.1%	0%	21.3%	8.6%	36.7%
1978	57.4	2.4	78.6	5.1	9.3
AAGR 1979-1984	30.6	30.6	29.0%	29.1%	22.4%
1984	285.4	11.9	362.9	23.6	31.2

INPUT

TRADITIONAL MINICOMPUTERS IN THE FEDERAL GOVERNMENT INSTALLED BASE-1978 ($M)

YEAR	CPUs ($M)		ADD-ONS AND OTHER PERIPHERALS ($M)		SERVICE ($M)
	PUR-CHASE	LEASE	PUR-CHASE	LEASE	
PREVIOUS TO 1975	214.9	9.6	265.8	10.5	11.6
AAGR 1975-1978	11.3%	0	9.5%	2.9%	19.9
1978	328.5	9.6	382.6	11.8	23.9
AAGR 1979-1984	3.8%	3.8%	5.7%	5.7%	8.8%
1984	409.8	12.0	531.9	16.4	39.6

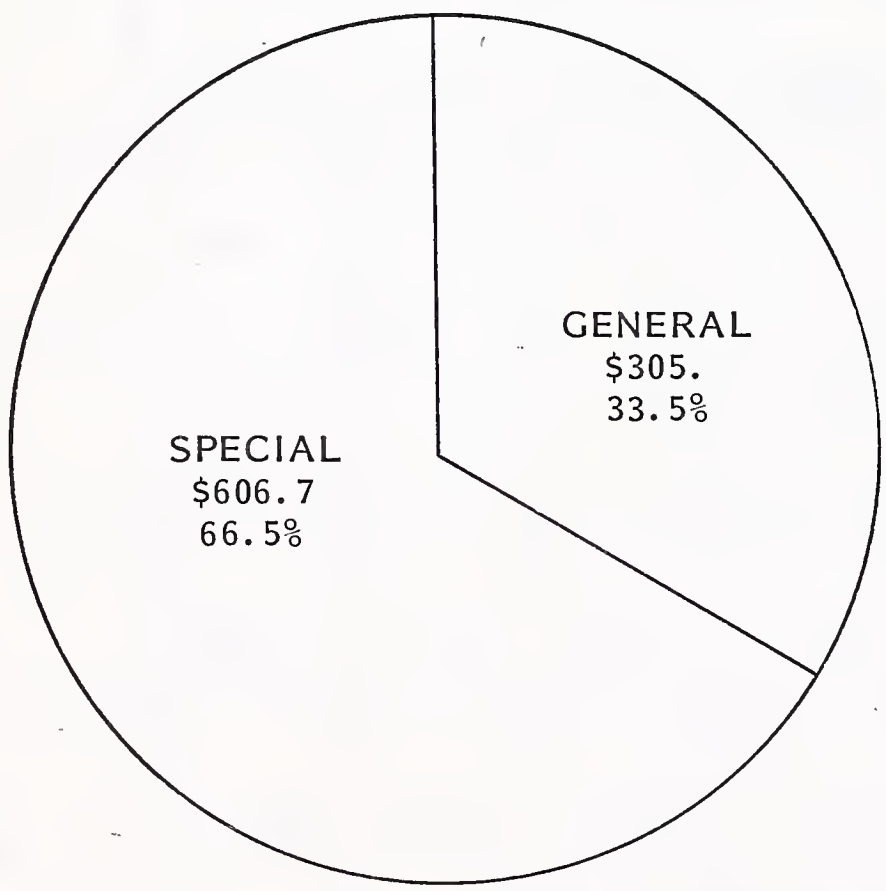
INPUT

MICROCOMPUTERS IN THE FEDERAL GOVERNMENT
INSTALLED BASE-1978 ($M)

YEAR	CPUs ($M)		ADD-ONS AND OTHER PERIPHERALS ($M)		SERVICE ($M)
	PUR-CHASE	LEASE	PUR-CHASE	LEASE	
PREVIOUS TO 1975	15.9	0%	18.1	0	0.0
AAGR 1975-1978	.6%	0%	.7%	0%	
1978	16.9	0%	18.6	0%	.1
AAGR 1979-1984	22.9%	0%	26.4%	0%	67.4%
1984	58.3	0	75.9	0	2.2

INPUT

SPECIAL VERSUS GENERAL MANAGEMENT CLASSIFICATION MINICOMPUTERS IN THE INSTALLED BASE-1978 ($M)



TOTAL = $911.7

INPUT

SPECIAL MANAGEMENT CLASSIFICATION MINICOMPUTERS IN THE INSTALLED BASE-1978

YEAR	CPUs ($M)		ADD-ONS AND OTHER PERIPHERALS ($M)		SERVICE ($M)
	PUR-CHASE	LEASE	PUR-CHASE	LEASE	
PREVIOUS TO 1975	187.3	1.3	202.9	2.9	9.3
AAGR 1975-1978	12.4%	0	10.5%	11.0%	20.3%
1978	299.0	1.3	302.2	4.4	19.2
AAGR 1979-1984	11.0%	10.8%	16.6%	24.3%	13.9%
1984	560.3	2.4	721.6	16.2	42.0

INPUT

GENERAL MANAGEMENT CLASSIFICATION MINICOMPUTERS IN THE INSTALLED BASE-1978

YEAR	CPUs ($M)		ADD-ONS AND OTHER PERIPHERALS ($M)		SERVICE ($M)
	PUR-CHASE	LEASE	PUR-CHASE	LEASE	
PREVIOUS TO 1975	58.4	10.7	117.5	11.4	5.0
AAGR 1975-1978	15.4%	0%	10.9%	2.3%	29.8
1978	103.8	10.7	177.6	12.5	14.1
AAGR 1979-1984	10.9%	12.3%	5.8%	11.1%	14.0%
1984	193.2	21.5	249.1	23.8	31.0

INPUT

PROBLEMS IN IDENTIFYING EMBEDDED SYSTEMS

- GOVERNMENT CONTRACTS FOR AND BUYS COMPLETE SYSTEMS
- GOVERNMENT DOES NOT KEEP FIGURES ON INDIVIDUAL COMPONENETS IN THESE SYSTEMS
- PROCUREMENT OFFICERS WOULD NOT RELEASE CONFIGURATION OF INSTALLED SYSTEMS
- DETERMINING THE INSTALLED BASE FOR EMBEDDED COMPUTERS WAS HAMPERED BY:
  - CLASSIFIED INFORMATION
  - RESTRUCTION OR LOSS
  - PROCUREMENT REQUESTS DO NOT SPECIFY IF NEW ORDERS ARE REPLACEMENTS OR ADDITIONAL SYSTEMS
- EXAMPLE: NAVY HAS PROCURED SOME 2,000 UYK-20s
  - EIGHTEEN APPEAR ON GSA LISTING
  - APPROXIMATELY 1,980 UNITS ARE SOMEWHERE
    - UNITS MAY OR MAY NOT EXIST
- CONTRACTORS WOULD NOT REVEAL DESIGN INFORMATION ON SYSTEMS EITHER IN PRODUCTION OR PLANNING
  - DUE TO NATIONAL SECURITY OR
  - COMPETITIVE SECRETS

INPUT

PROJECTED EXPENDITURES FOR IDENTIFIABLE EMBEDDED SYSTEMS 1980-1984

AGENCY	1980	1981	1982	1983	1984	TOTAL
AIR FORCE	125	103	111	129	149	617
ARMY	181	227	190	190	190	978
NAVY/MARINE	54	99	121	122	110	506
TOTAL DOD	360	429	422	441	449	2,101
DOE	22	47	108	66	39	282
NASA	13	17	18	31	10	89
GRAND TOTAL	395	493	548	538	498	2,472
LESS OVER REQUEST (89%)	352	439	488	479	443	2,201

INPUT

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